

Abbas ibn Firnas

أبو القاسم عباس بن فرناس بن ورداس (Arabic: عباس بن فرناس بن ورداس; التاكرني c. 809/810 – 887 CE), known as 'Abbās ibn Firnās (Arabic: عباس ابن فرناس) was an Andalusi polymath.^{[1][2][3]} He was an inventor, astronomer, physician, chemist, engineer, Andalusi musician, and Arabic-language poet.^[3] He was reported to have experimented with unpowered flight.^{[1][4][5][6]}

Ibn Firnas made various contributions in the field of astronomy and engineering. He constructed a device which indicated the motion of the planets and stars in the Universe. In addition, Ibn Firnas came up with a procedure to manufacture colourless glass and made magnifying lenses for reading, which were known as [reading stones](#).^{[5][6]}

Origin

Abbas ibn Firnas was born in [Ronda](#), in the Takurunna province and lived in [Córdoba](#).^[7] His ancestors participated in the [Muslim conquest of Spain](#).^[8] His full name was "Abu al-Qasim Abbas ibn Firnas ibn Wirdas al-Takurini", although he is better known as Abbas ibn Firnas. There is very little biographical information on him. While the majority of sources describe him as a Umayyad *mawlā* (client) of [Berber](#) origin,^{[1][9][10][11]} some sources describe him as [Arab](#)^{[9][12]} or as native [muladí](#).^[13]

Work

Abbas ibn Firnas devised a means of manufacturing colourless [glass](#), invented various glass [planispheres](#), made [corrective lenses](#) ("[reading stones](#)"), devised an apparatus consisting of a chain of objects that could be used to simulate the motions of the planets and stars, and developed a process for cutting rock crystal

Abbas ibn Firnas	
عباس ابن فرناس	
	20th century statue of Ibn Firnas outside Baghdad International Airport
Born	c. 810 CE Ronda, Takurunna province, Emirate of Córdoba
Died	887 CE Córdoba , Emirate of Córdoba
Known for	Astronomy, engineering, medicine, invention

that allowed Al-Andalus to cease exporting quartz to Egypt to be cut.^{[5][6]} He introduced the *Sindhind* to Al-Andalus,^[1] which had important influence on astronomy in Europe.^[14] He also designed the al-Maqata, a water clock,^[15] and a prototype for a kind of metronome.^{[16][17]}

Aviation

Some seven centuries after the death of Firnas, the Algerian historian Ahmad al-Maqqari (d. 1632) wrote a description of Ibn Firnas that included the following:^[18]

Among other very curious experiments which he made, one is his trying to fly. He covered himself with feathers for the purpose, attached a couple of wings to his body, and, getting on an eminence, flung himself down into the air, when according to the testimony of several trustworthy writers who witnessed the performance, he flew a considerable distance, as if he had been a bird, but, in alighting again on the place whence he had started, his back was very much hurt, for not knowing that birds when they alight come down upon their tails, he forgot to provide himself with one.^[6]

Al-Maqqari is said to have used in his history works "many early sources no longer extant", but in the case of Ibn Firnas, he does not cite his sources for the details of the reputed flight, though he does claim that one verse in a ninth-century Arab poem is actually an allusion to Ibn Firnas's flight. The poem was written by Mu'min ibn Said, a court poet of Córdoba under Muhammad I (d. 886), amir of the Emirate of Córdoba, who was acquainted with and usually critical of Ibn Firnas.^[6] The pertinent verse runs: "He flew faster than the phoenix in his flight when he dressed his body in the feathers of a vulture."^[18] No other surviving sources refer to the event.^[19]

It has been suggested that Ibn Firnas's attempt at glider flight might have inspired the attempt by Eilmer of Malmesbury between 1000 and 1010 in England,^[20] but there is no evidence supporting this hypothesis.^[6]

Armen Firman

According to some secondary sources, about 20 years before Ibn Firnas attempted to fly he witnessed a man named Armen Firman wrap himself in a loose cloak stiffened with wooden struts and jump from a tower in Córdoba, intending to use the garment as wings on which he could glide. The alleged attempt at flight was unsuccessful, but the garment slowed his fall enough that he sustained only minor injuries.^[5]

However, other secondary sources that deal exhaustively with Ibn Firnas' flight attempt make no reference at all to Armen Firman.^{[6][21][22]} Al-Maqqari's account of Ibn Firnas, being the sole

primary source of the flight story,^[6] makes no mention of Firman. Since Firman's jump is said to have been Ibn Firnas' source of inspiration,^[5] the lack of any mention of Firman in Al-Maqqari's account may point to synthesis—the tower jump later confused with Ibn Firnas' gliding attempt in secondary writings.^[5] In fact, it is likely that Armen Firman is simply the Latinized name of Abbas ibn Firnas.^[23]

Legacy

In 1973, a statue of Ibn Firnas by the sculptor Badri al-Samarrai was installed at the [Baghdad International Airport](#) in [Iraq](#).^[24] In 1976, the [International Astronomical Union](#) (IAU) approved of naming a crater on the moon after him as [Ibn Firnas](#).^[25] In 2011, one of the bridges going over the [Guadalquivir](#) river in [Córdoba](#), Spain, was named the "[Abbas ibn Firnás Bridge](#)".^[26] A British one-plane airline, Firnas Airways, was also named after him.^[27]

See also



- [Hezârfen Ahmed Çelebi](#)
- [History of aviation](#)
- [Ismail ibn Hammad al-Jawhari](#)
- [Lagâri Hasan Çelebi](#)
- [List of inventions in the medieval Islamic world](#)
- [Timeline of science and technology in the Islamic world](#)

References

1. Lévi-Provençal, E. (1986). "Abbās b. Firnās" (http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/abbas-b-firnas-SIM_0021) . In Bearman, P.; Bianquis, Th.; Bosworth, C.E.; van Donzel, E.; Heinrichs, W.P. (eds.). *Encyclopaedia of Islam*. Vol. I (2nd ed.). Brill publishers. p. 11.
2. "Ibn Firnas ('Abbâs)" by [Ahmed Djebbar](#), *Dictionnaire culturel des sciences*, by Collective under the direction of Nicolas Witkowski, Du Regard Editions, 2003, [ISBN 2-84105-128-5](#).

3. [Lynn Townsend White, Jr.](#) (Spring, 1961). "Eilmer of Malmesbury, an Eleventh Century Aviator: A Case Study of Technological Innovation, Its Context and Tradition", *Technology and Culture* 2 (2), p. 97-111 [100]: "Ibn Firnas was a polymath: a physician, a rather bad poet, the first to make glass from stones (quartz), a student of music, and inventor of some sort of metronome."
4. How Invention Begins: Echoes of Old Voices in the Rise of New Machines By John H. Lienhard
5. John H. Lienhard (2004). "'Abbas Ibn Firnas". *The Engines of Our Ingenuity*. Episode 1910. NPR. KUHF-FM Houston. Transcript (<http://www.uh.edu/engines/epi1910.htm>) .
6. [Lynn Townsend White, Jr.](#) (Spring, 1961). "Eilmer of Malmesbury, an Eleventh Century Aviator: A Case Study of Technological Innovation, Its Context and Tradition", *Technology and Culture* 2 (2), p. 97-111 [100f.]
7. Lévi-Provençal, Evariste (1999). *Histoire de l'Espagne musulmane* (<https://books.google.com/books?id=a9wpAPjm-fIC&q=Abbas&pg=PA274>) (in French). Maisonneuve et Larose. ISBN 978-2-7068-1386-3.
8. Nicolas Witkowski (dir.) et al., Paris, Editions du Regard; Éditions du Seuil, 2001, 441 p.
9. Rossi, Cesare; Russo, Flavio (26 August 2016). *Ancient Engineers' Inventions: Precursors of the Present* (<https://books.google.com/books?id=3CbqDAAAQBAJ&pg=PA229>) . Springer. p. 229. ISBN 978-3-319-44476-5.
10. Elías Terés (2019). "ABBAS IBN FIRNAS". *The Formation of al-Andalus, Part 2 Language, Religion, Culture and the Sciences*. Routledge. pp. 234–244. ISBN 978-1-351-88958-2.
11. Samsó, Julio (2014). "*Abbās ibn Firnās*" (<https://www.oxfordreference.com/display/10.1093/acref:oso/9780199812578.001.0001/acref-9780199812578-e-1>) . In Kalin, Ibrahim (ed.). *The Oxford Encyclopedia of Philosophy, Science, and Technology in Islam*. Oxford University Press. ISBN 978-0-19-981257-8. Retrieved 5 August 2023.
12. *Illustrated Dictionary of the Muslim World* (https://books.google.com/books?id=8Zp_5lydPGgC&pg=PA106) . Marshall Cavendish. 2011. p. 106. ISBN 978-0-7614-7929-1.
13. Proyectos, HI Iberia Ingeniería y. "Historia Hispánica" (<https://historia-hispanica.rah.es/biografias/89-abbas-b-firnas-b-wardas-abu-l-qasim>) . *historia-hispanica.rah.es* (in Spanish). Retrieved 27 February 2025.
14. [Vernet, Juan](#) [1981] (1970). "Abbas Ibn Firnas". In [Gillespie, C.C.](#) (ed.). *Dictionary of Scientific Biography*. Vol. 1. New York: Charles Scribner's Sons. p. 5.
15. Marshall Cavendish Reference. *Illustrated Dictionary of the Jewish World*. Marshall Cavendish, 2010 ISBN 9780761479291 p.106.

16. Roth, Norman (2017). *Routledge Revivals: Medieval Jewish Civilization (2003): An Encyclopedia* (<https://books.google.com/books?id=RTorDwAAQBAJ&pg=PT489>) . Taylor & Francis. p. 465. ISBN 978-1-351-67698-4.
17. Tsuji, Kinko; Müller, Stefan C. (2021). *Physics and Music: Essential Connections and Illuminating Excursions* (<https://books.google.com/books?id=dwgxEAAAQBAJ&pg=PA40>) . Springer Nature. pp. 40 (see footnote). ISBN 978-3-030-68676-5.
18. Lynn Townsend White, Jr. (Spring, 1961). "Eilmer of Malmesbury, an Eleventh Century Aviator: A Case Study of Technological Innovation, Its Context and Tradition", *Technology and Culture* 2 (2), p. 97-111 [101]
19. Lynn Townsend White, Jr. (Spring, 1961). "Eilmer of Malmesbury, an Eleventh Century Aviator: A Case Study of Technological Innovation, Its Context and Tradition", *Technology and Culture* 2 (2), p. 97-111 [101]: "The Moroccan historian al-Maqqari, who died in 1633 CE but who used many early sources no longer extant, tells of a certain Abu'l Qasim 'Abbas b. Firnas who lived in Cordoba in the later ninth century. [...] No modern historian can be satisfied with a source written 750 years after the event, and it is astonishing that, if indeed several eye-witnesses recorded Firnas's flight, no mention of it independent of al-Maqqari has survived. Yet al-Maqqari cites a contemporary poem by Mu'min b. Said, a minor court poet of Cordoba under Muhammad I (d. 886 CE), which appears to refer to this flight and which has the greater evidential value because Mu'min did not like b. Firnas: he criticized one of his metaphors and disapproved his artificial thunder. [...] Although the evidence is slender, we must conclude that b. Firnas was the first man to fly successfully, and that he has priority over Eilmer for this honor. But it is not necessary to assume that Eilmer needed foreign stimulus to build his wings. Anglo-Saxon England in his time provided an atmosphere conducive to originality, perhaps particularly in technology."
20. Lienhard, John H. (1988). "The Flying Monk" (<http://www.uh.edu/engines/epi3.htm>) . University of Houston. Retrieved 6 February 2015.
21. Terias, Elias, "Sobre el vuelo de Abbas Ibn Firnas", *Al-Andalus*, Vol. 29, No. 2 (1964), p. 365–369
22. Lévi-Provençal, E. "Abbās b. Firnās b. Wardūs, Abu 'l-Kāsim." *Encyclopaedia of Islam*, 2nd edition, Edited by: P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel and W.P. Heinrichs, 2009
23. "Arabic and Islamic Names of the Moon Craters MuslimHeritage 9-28-07" (<https://web.archive.org/web/20131016113328/http://www.muslimheritage.com/topics/default.cfm?ArticleID=815>) . Archived from the original (<http://www.muslimheritage.com/topics/default.cfm?ArticleID=815>) on 16 October 2013. Retrieved 14 July 2009.

24. "Curious Questions: Did an Englishman called John Stringfellow really invent powered flight half a century before the Wright Brothers?" (<https://www.countrylife.co.uk/comment-opinion/curious-questions-did-an-englishman-called-john-stringfellow-really-invent-powered-flight-half-a-century-before-the-wright-brothers-226914>) . *Country Life*. 15 May 2021. Retrieved 24 October 2021.
25. "Planetary Names: Crater, craters: Ibn Firnas on Moon" (<https://planetarynames.wr.usgs.gov/Feature/2634>) . *Gazetteer of Planetary Nomenclature International Astronomical Union (IAU) Working Group for Planetary System Nomenclature (WGPSN)*. 18 October 2010. Retrieved 24 October 2021.
26. "Abbas Ibn Firnás Bridge" (<https://structurae.net/en/structures/abbas-ibn-firnas-bridge>) . *Structurae*. 14 January 2011. Retrieved 24 October 2021.
27. Harding, Nick (14 June 2018). "Firnas Airways: How not to start an airline" (<https://ukaviation.news/firnas-airways-how-not-to-start-an-airline/>) . *UK Aviation News*. Retrieved 10 February 2021.

Sources

- J. Vernet, *Abbas Ibn Firnas. Dictionary of Scientific Biography* (C.C. Gillispie, ed.) Vol. I, New York: Charles Scribner's Sons, 1970–1980. pg. 5.
- Lynn Townsend White Jr. (Spring, 1961). "Eilmer of Malmesbury, an Eleventh Century Aviator: A Case Study of Technological Innovation, Its Context and Tradition", *Technology and Culture* 2 (2), p. 97–111 [100f.], doi:10.2307/3101411 (<https://doi.org/10.2307%2F3101411>) .
- Salim T.S. Al-Hassani (ed.), Elisabeth Woodcock (au.), and Rabah Saoud (au.). 2006. *1001 Inventions. Muslim Heritage in Our World*. Manchester: Foundation for Science, Technology and Civilisation. See pages 308–313. ([ISBN 978-0-9555035-0-4](#))

Further reading

- Zaheer, Syed Iqbal (2010). *An Educational Encyclopedia of Islam*. Iqra Welfare Trust. p. 1280. ISBN 9786039000440.